

SELF-ALIGNED GATE AND METHOD

ABSTRACT OF THE DISCLOSURE

A semiconductor structure comprises a silicon substrate of a first conductivity type including wells of a second conductivity type formed on a surface thereof. The wells may be laterally isolated by shallow trench isolation. Transistors are formed in the wells by first forming several chemically distinct layers. Anisotropic etching then forms openings in a top one of the layers. A blanket dielectric layer is formed in the openings and on the layers. Anisotropic etching removes portions of the blanket dielectric layer from planar surfaces of the substrate but not from sidewalls of the openings to form dielectric spacers separated by gaps within the openings. Gate oxides are formed by oxidation of exposed areas of the substrate. Ion implantation forms channels beneath the gate oxides. Polysilicon deposition followed by chemical-mechanical polishing defines gates in the gaps. The chemically distinct layers are then stripped without removing the dielectric spacers. Conventional fabrication operations define other structures to complete fabrication of an integrated circuit.